

## SOLAR OBSERVATIONS

## SOLAR AND SKY RADIATION MEASUREMENTS DURING SEPTEMBER, 1925

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For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January, 1924, 52:42 and January, 1925, 53:29.

From Table 1 it is seen that solar radiation measurements averaged below normal for September at Washington, D. C., and close to normal at Madison, Wis., and Lincoln, Nebr.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged below the September normal at all three stations.

At Washington skylight polarization measurements made on three days give a mean of 55 per cent, with a maximum of 67 per cent on the 25th. At Madison, measurements made on eight days give a mean of 58 per cent with a maximum of 66 per cent on the 24th. These are close to normal values at Washington but below normal at Madison.

TABLE 1.—Solar radiation intensities during September, 1925

[Gram-calories per minute per square centimeter of normal surface]

## Washington, D. C.

Date	Sun's zenith distance											Local mean solar time
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon	
	75th mer. time	Air mass										
		A. M.					P. M.					
		e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	
Sept. 2	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
3	11. 81				0. 86						8. 18	
4	16. 20					1. 19					15. 65	
5	16. 79	0. 66	0. 76		0. 89						15. 65	
6	14. 10				0. 75						12. 68	
7	14. 10			0. 45	0. 75						12. 24	
17	16. 79		0. 49	0. 70	0. 93						11. 38	
19	8. 48	0. 70	0. 89	1. 06	1. 22	1. 40					7. 57	
25	7. 57	0. 76	0. 87								7. 57	
26												
Means	(0.73)	0.73	0.74	0.93	(1.30)							
Departures	+0.04	-0.02	-0.13	-0.11	-0.02							

1 Extrapolated.

TABLE 1.—Solar radiation intensities during September, 1925—Con.

## Madison, Wis.

Date	Sun's zenith distance										Local mean solar time	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon
	75th mer. time	Air mass										
		A. M.					P. M.					
		e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0		5.0
Sept. 3	mm.	cal.	cal.	ca .	cal.	ca <sup>s</sup> .	cal.	cal.	cal.	cal.	mm.	
4	16.20				0.92	1.30	1.04				16.79	
14	12.68	0.78	0.84	0.88	1.06		0.95				14.00	
17	9.14						1.12				8.81	
21	14.10				1.01						18.56	
23	7.04		1.01	1.11	1.29	1.49					6.50	
24	7.57		0.89	1.05	1.22	1.44	1.24				6.76	
25	9.14	0.91	1.00	1.12	1.29	1.47					9.83	
	6.27		0.93	0.98							7.87	
Means		(0.84)	0.93	1.03	1.13	1.42	1.06					
Departures		-0.04	-0.02	+0.01	-0.03	+0.04	-0.10					

## Lincoln, Nebr.

Sept.	Sun's zenith distance											Local mean solar time
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		
	Air mass											
	A. M.					P. M.						
	e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0		
2	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
3	14.10	0.76	0.88	1.00	1.12	1.42	1.18	1.02	0.85	0.76	13.13	
4	14.10	0.75	0.86	0.99	1.16	1.39	1.24	1.01	0.81	0.76	13.13	
12	7.29	0.75	0.88	1.00	1.12	1.42	1.18	1.02	0.85	0.76	7.04	
16	14.60	0.63	0.70	0.83	0.97	1.22	1.09	0.90	0.80	0.79	15.59	
17	17.37	0.93	1.07	1.22	1.37	1.51	1.21	1.08	0.89	0.79	15.59	
18	15.11	0.87	0.98	1.10	1.24	1.37	1.21	1.08	0.89	0.79	15.59	
19	16.79	0.87	0.98	1.10	1.24	1.37	1.21	1.08	0.89	0.79	15.59	
23	7.04	0.70	0.89	1.06	1.22	1.40	1.24	1.01	0.81	0.78	7.57	
24	8.18	0.80	1.02	1.13	1.31	1.42	1.21	1.05	0.93	0.78	10.21	
25	12.68	0.76	0.89	1.04	1.22	1.43	1.21	1.04	0.91	0.78	14.10	
Means	0.76	0.92	1.06	1.21	1.42	1.14	1.00	0.86	0.75	0.75		
Departures	+0.00	+0.06	+0.05	+0.01	+0.03	-0.01	+0.03	+0.03	+0.02	+0.02		

TABLE 2.—Solar and sky radiation received on a horizontal surface

[Gram-calories per square centimeter of horizontal surface]

Week beginning—	Average daily radiation					Average daily departure from normal		
	Washington	Madison	Lincoln	Chicago	New York	Washington	Madison	Lincoln
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Sept. 3 1925	408	300	403	357	265	+11	-76	-34
10	307	337	328	167	240	-66	-12	-83
17	334	381	354	289	312	-26	+54	-36
24	346	256	319	246	314	-1	-50	-51
Excess or deficiency since first of year on September 30	+1,561	+1,645	-721					